

# **Bedbugs: The Basics**

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# Introduction

- This presentation will explore:
  - Classification
  - Life cycle and habitat
  - History and significance
- Monitoring
- Cultural and mechanical controls



# The Bed Bug

- **Class: Insecta (insects)**
- **Order: Hemiptera (true bugs)**
- **Family: Cimicidae (bed bugs and bat bugs)**
- **Genus and species: *Cimex lectularius***
- **Description:**
  - **Oval, wingless insects**
  - **4 – 7mm long, dorsoventrally flattened**
  - **Pale yellow or brown (mahogany-color after feeding)**

# **Why Bed Bugs Are Resurging**

- 1. Greater human mobility**
- 2. Less use of any residuals – last 5-6 yrs**
- 3. Significant switch to baits for roaches & ants**
- 4. Many PMPs are not familiar w/ bed bugs**
  - inadequate survey, wrong ID, incomplete treatment**
- 5. Pyrethroids used in most accounts are repellent**
  - bugs do not get a lethal dose (esp. in deep cracks)**
  - harborages easy to miss in first survey**
  - bugs may detect & avoid residual treatments**
  - bug pop. often “split” or move from such treatments**
- 6. People may call any unknown bite - “bed bugs”**

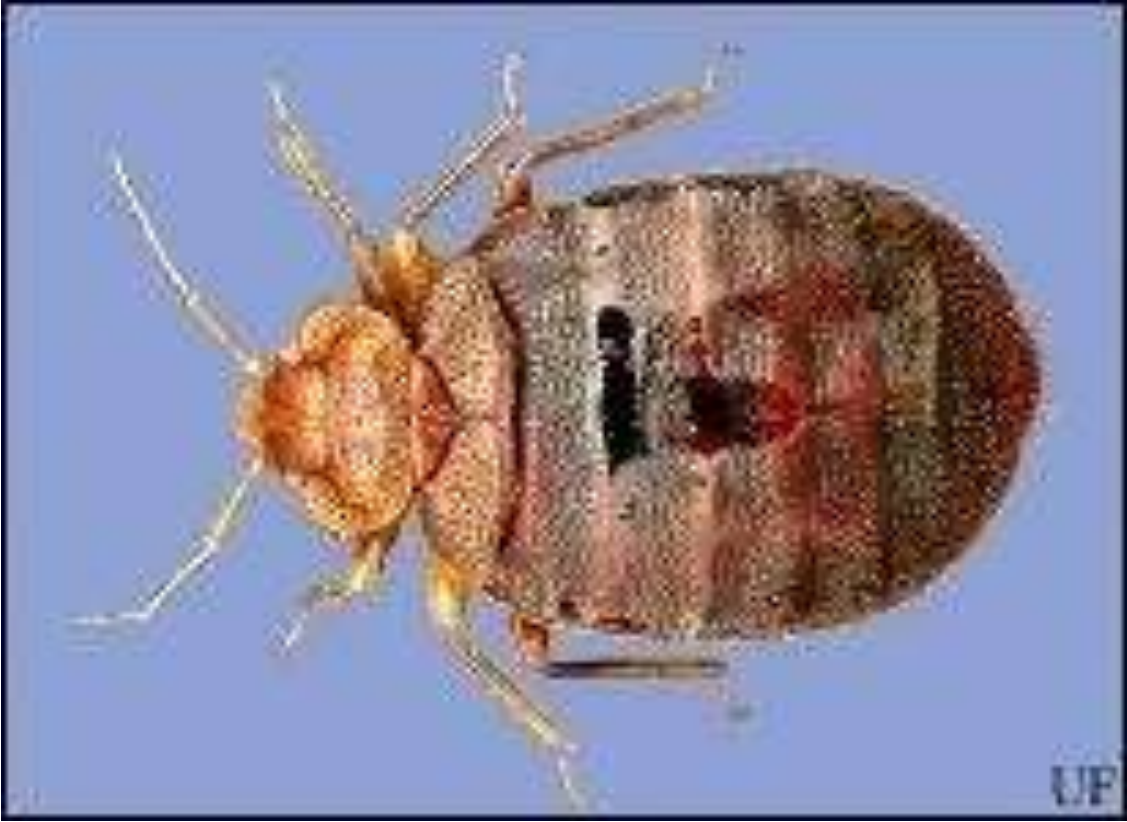
# ***Cimex lectularius***



Egg



Adult





Redbug

# Life Cycle

- Incomplete metamorphosis (no pupation)
  - Egg → Nymph → Adult
  - Females lay 6 – 10 eggs per week
  - Eggs hatch in 10-14 days
  - Five nymphal instars
    - Five to eight weeks to reach maturity
    - Bloodmeal taken during each instar

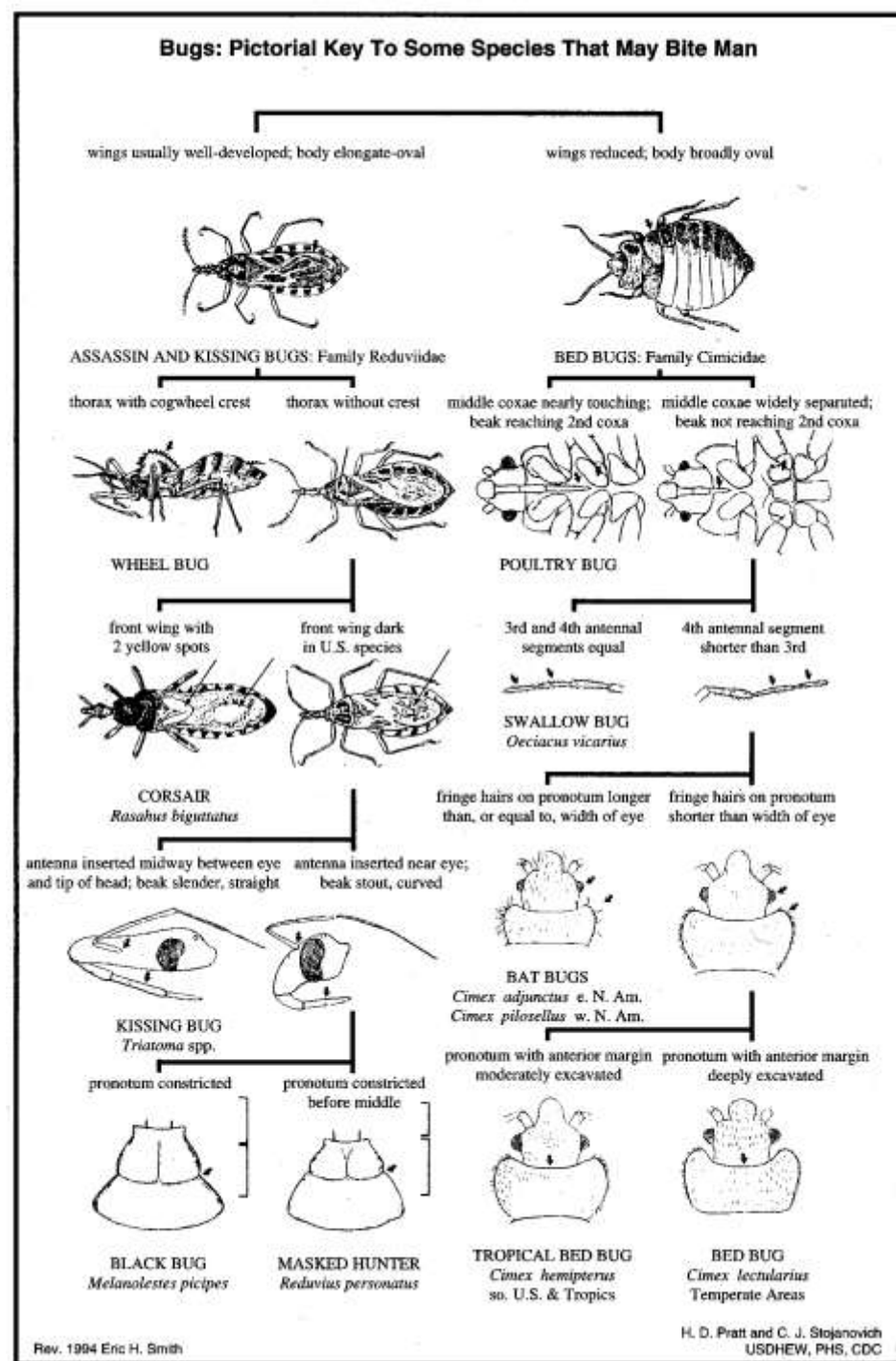
# Life Cycle

- **Both sexes take blood meals**
- **Primary host- humans (may use other warm-blooded hosts, ex- birds)**
- **Feed with piercing/sucking mouthparts**
- **Only on host during feeding**
- **Active at night (stay hidden during day)**

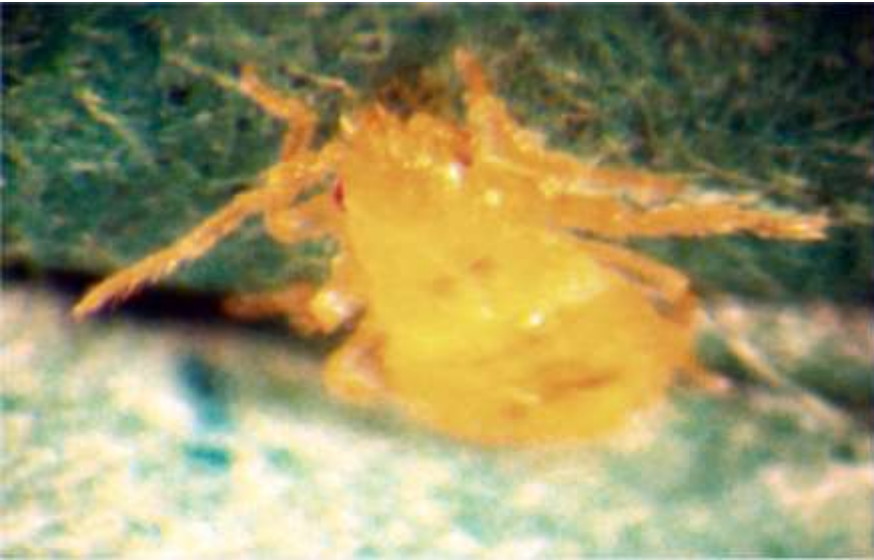


# Identify the Bugs

- 4<sup>th</sup> Antennal Segment  
< 3<sup>rd</sup> Segment
  - “Fringe Hairs” on  
Pronotum < Width of  
Compound Eye
  - Pronotum Front Margin  
**Deeply** Indented  
(vs. Only Slightly)
- = *C. lectularius* L.



# Bugs Have Thin, Flat Bodies



Adult Male - *C. lectularius* (L.)



# Adult Male - Engorged



Adult Female



# Adult Female – Lateral View



# Engorging Adults & N - 2



# Engorged Nymphs-1 & 2



# Feeding - Several Instars



# Dorsal View - Front Half



# Ventral View - Head



# Adult Bed Bugs Mating



# Bed Bug vs. Bat Bug

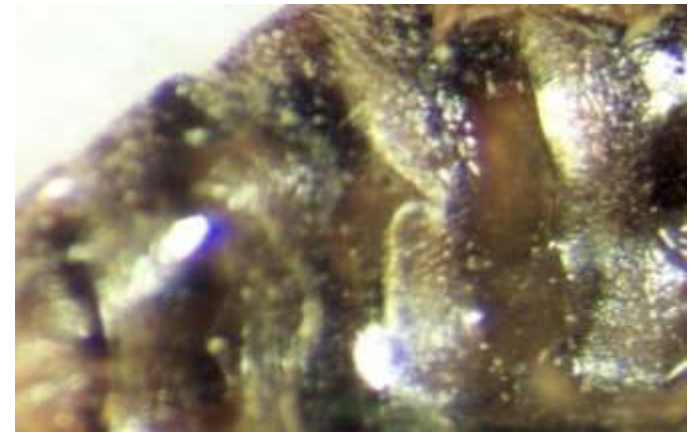


# the **Eastern Bat Bug**

*C. adjunctus* Barber



# Swallow Bug



# Medical Significance

- **Bites**
  - Can be severe nuisance
  - Generally painless
    - 5-10 minutes to complete feeding
    - Most often on face, neck, arms, hands
  - May produce reaction
    - Similar to flea bite
    - Inflamed, raised area
    - May itch
- **Disease transmission**
  - None proven





# **A Historical Perspective**

- **Pre-WWII**
  - Huge problem
  - Commonly present in homes and hotels
- **Post-WWII**
  - Infestations much more rare
    - DDT
    - Improved sanitation practices
    - Furniture design (less elaborate = less hiding places)
    - Mainly associated with low-rent or unclean properties

# **The Return...**

- **Reasons:**
  - **Decrease in pesticide usage**
    - **Less products available, EPA banning OP's**
    - **Less residual control with existing products**
  - **Increase in international travel**
- **Remember: Bedbugs are not limited to lower-end establishments anymore**

# **An IPM Approach**

- **Inspect the premises**
- **Correctly identify the pest**
- **Keep records (dates/locations)**
- **Reduce clutter**
- **Eliminate habitats**
- **Remove bed bugs with cleaning**

# An IPM Approach

- Find a PMP skilled in bed bug control
- Follow up
- Raise awareness

**Guidelines for Prevention and Management of  
Bed Bugs in Shelters and Group Living  
Facilities**

[http://www.nysipm.cornell.edu/publications/bb\\_guidelines/default.asp](http://www.nysipm.cornell.edu/publications/bb_guidelines/default.asp)

# **Step 1- Inspect**

- **Inspect all adjacent rooms and/or units**
  - **Bedbugs can travel long distances**
  - **Often move upward over time (check rooms above)**
- **Things to look for:**
  - **Caste skins**
  - **Blood spots**
  - **“Buggy” odor (sweet, berrylike), esp. w/heavy infestations**
  - **Live bugs (confirm with proper ID)**

# Step 1- Inspect

- **Where to look...**

- **Bed frame**
- **Box spring**
- **Linens**
- **Cracks in wall**
- **Behind pictures**
- **Gaps in baseboard**
- **Drawers**
- **Cracks in furniture**
- **Under furniture**
- **Curtains**
- **Crown moldings**
- **Under  
rugs/carpeting**
- **Under/inside  
electronics**
- **Switch plates**
- **and the like...**

# Habitat



- **Cracks and crevices...**
  - Seams and folds of bedding and mattress
  - Behind pictures
  - Cracks in plaster or woodwork (e.g.- headboard)
  - Any other tight spot
- **Primary location today: Hotels**
  - Frequent presence of sleeping hosts
  - Travelers facilitate dispersal
  - Other locations include homes, apartments







# “Rusty Spots” on Bedding





# Bed Bugs & Rusty Spots on Sheet



**Bed  
Bug  
&  
Rusty  
Spots  
on  
a  
Sheet**







# Survey Sites: Bed Frames



# Mattress (especially Seams)



SERVICE, INC.  
Emmaus, PA

# Upholstered Chairs





# Window Curtains & Frames



# Eggs and Droppings





# **Step 2- Notify Facility of Findings and Make Recommendations**

- **Present customer with findings**
  - Size of infestation
  - Location(s)
- **Make recommendations**
  - **Sanitation practices:**
    - Launder bed linens regularly
    - Remove any bird nests found
    - Vacuum regularly
  - **Other helpful hints:**
    - Choose simple furniture designs
    - Repair damaged sheet rock, baseboards, etc. as needed

- How long with the rooms or facility need to remain closed?

- The amount of time the room or facility will need to remain closed depends upon the treatment utilized.

- Re-opening of the facility is at the discretion of the local sanitarian and local pest control operator.